



TUNGSTEN NYLON BULLETS

SMALL ARMS RANGE TUNGSTEN EVALUATION



A tungsten nylon bullet and a traditional lead round.
There is no visual or performance difference between the two.

The U.S. Army Environmental Command (USAEC) has begun a first-of-its-kind study to determine how tungsten interacts with the environment on small arms ranges at Army installations. The multi year study will evaluate the tungsten metal used in the Army's tungsten nylon bullets.

The tungsten nylon bullet was developed as a potential replacement for the traditional 5.56 mm lead rounds in an effort to reduce the amount of lead leaching into range soils. Recent studies have indicated that tungsten may be more soluble in certain environmental conditions than previous research has shown. Tungsten was chosen to replace lead in small arms munitions from seven evaluated materials. Testing conducted by the U.S. Army Armament Research, Development and Engineering Center (ARDEC) concluded that a tungsten mixture had a density closest to lead and provided the accuracy and energy transfer needed for effective combat and training. The tungsten nylon composite was chosen based on these performance criteria and a determination from the scientific literature that tungsten metal was insoluble in water and therefore presents a minimal risk to the environment.

Camp Edwards, at the Massachusetts Military Reservation (MMR), was the first military installation to use the new tungsten nylon bullet for training in 1999 and 2000. Under the management of USAEC, the U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory will implement the study at MMR beginning in the summer of 2005. A final report will be released by the fall of 2006. Specifically, the study will characterize the mobility of tungsten, used in tungsten nylon based bullets, as well as lead and other small arms munitions metal constituents. Ground water will be sampled at several different ranges on MMR for the presence of tungsten and/or lead, and measurements of soil will be taken to determine any migration of metal constituents through them.

For more information

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In addition to MMR, two other military installations will be chosen based on site accessibility, soil variations and other site-specific conditions.

The Army's tungsten nylon bullet is a tungsten composite, not an alloy. Tungsten composites contain individual, tiny areas of each material pressed together. In the case of the Army's bullet, tungsten metal (W) and nylon are pressed together into the form of a bullet. These materials remain distinct and separate from each other and do not undergo any chemical changes.

FURTHER REFERENCES FOR TUNGSTEN METALS

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Tungsten composites are found in commonly used items such as golf clubs and tennis rackets.

